



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,061	06/06/2002	Chi-Hsing Hsu	8941-US-PA	2124

31561 7590 03/12/2003

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER

NORRIS, JEREMY C

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/064,061

Applicant(s)

HSU ET AL.

Examiner

Jeremy C. Norris

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 8-15, and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,479,758 (hereafter Arima).

Arima discloses, referring to figures 1 and 17A, a flip-chip package substrate (1), comprising: a plurality of sequentially stacked wiring layers (20, 18); at least one insulation layers (21, 19) between two neighboring wiring layers so that the insulation layer and the wiring layer are alternately stacked on top of each other; and at least one conductive plugs (35, 33) passing through the insulation layer for electrically connecting the wiring layers; wherein the uppermost wiring layer further includes: a plurality of core bump pads (3, 4a, 4b); at least one signal bump pad rings (6a, 6b) around the core bump pads; at least one power bump pad rings (5) around the core bump pads; and at least one ground bump pad rings (7) around the core bump pads; wherein the signal bump pad rings, the power bump pad rings and the ground bump pad rings are distributed concentrically, and the bottommost wiring layer further includes: a plurality of core ball pads; at least one signal ball pad rings around the core ball pads; at least one

power ball pad rings around the core ball pads; and at least one ground ball pad rings around the core ball pads; wherein the signal ball pad rings, the power ball pad rings and the ground ball pad rings are distributed concentrically (see discussion of the reverse terminal 206, col. 8, lines 15-50) [claim 1], wherein the core bump pads includes a plurality of core power bump pads and a plurality of core ground bump pads (see col. 5, lines 50-65) [claim 2], wherein the core ball pads includes a plurality of core power ball pads and a plurality of core ground ball pads [claim 5], wherein the signal bump pad ring encloses a plurality of bump pads over 50% of which are signal bump pads [claim 8], wherein the power bump pad ring encloses a plurality of bump pads over 50% of which are power bump pads [claim 9], wherein the ground bump pad ring encloses a plurality of bump pads over 50% of which are ground bump pads [claim 10], wherein the signal ball pad ring encloses a plurality of ball pads over 50% of which are signal ball pads [claim 11], wherein the power ball pad ring encloses a plurality of ball pads over 50% of which are power ball pads [claim 12], wherein the ground ball pad ring encloses a plurality of ball pads over 50% of which are ground ball pads [claim 13].

Arima additionally discloses, a flip-chip package substrate (1), comprising: a plurality of sequentially stacked wiring layers (16, 18, 20); at least one insulation layers (19, 21) between two neighboring wiring layers so that the insulation layer and the wiring layer are alternately stacked on top of each other; and at least one conductive plugs (33, 35) passing through the insulation layer for electrically connecting the wiring layers; wherein the bottommost wiring layer further includes: a plurality of core ball pads; at least one signal ball pad rings around the core ball pads; at least one power

ball pad rings around the core ball pads; and at least one ground ball pad rings around the core ball pads; wherein the signal ball pad rings, the power ball pad rings and the ground ball pad rings are distributed concentrically (see col. 8, lines 15-50) [claim 14], wherein the core ball pads includes a plurality of core power ball pads and a plurality of core ground ball pads [claim 15], wherein the signal ball pad ring encloses a plurality of ball pads over 50% of which are signal ball pads [claim 18], wherein the power ball pad ring encloses a plurality of ball pads over 50% of which are power ball pads [claim 19], wherein the ground ball pad ring encloses a plurality of ball pads over 50% of which are ground ball pads [claim 20].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, 6, 7, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arima.

Arima discloses the claimed invention as described above except Arima does not specifically state that the core power bump pads and the core ground bump pads are alternately positioned [claims 3, 6, 16], the core power bump pads are grouped together to form at least one core power bump pad rings, the core ground bump pads are grouped together to form at least one core ground bump pad rings and both the core power bump pad rings, and the core ground bump pad rings are distributed concentrically [claims 4, 7, 17]. However, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to arrange them in these manners, as this is the layout utilized by the rest of the invention. It is just not explicitly shown for this group. Moreover, it has been held that more than a mere change of form is necessary for patentability. *Span-Deck, Inc v. Fab-Con, Inc.* (CA 8, 1982) 215 USPQ 835.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,225,702	Nakamura,
US 6,384,476	Takeuchi,
US 6,388,207	Figueroa et al..

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 703-306-

Application/Control Number: 10/064,061
Art Unit: 2827

Page 6

5737. The examiner can normally be reached on Mon.-Th., 9AM - 6:30 PM and alt. Fri. 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCSN
March 10, 2003



DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800